

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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METHOD FOR TREATING  
PARTICULATE MATERIAL

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**EXHIBIT A**

## **P R E S S   R E L E A S E**

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### **AN EMULSION FOR ALL SEASONS FROM TOSAS**

TOSAS (Pty) Ltd, one of South Africa's leading manufacturers and suppliers of superior quality conventional and modified bituminous binders, anionic, cationic and inverted bitumen emulsions as well as cutback bitumens in their extensive, environmentally aware, product portfolio.

TOSAS Marketing Manager, Johan Jacobs, explains that the company's product ranges have been specially developed with cost efficiency, superior performance and protection of the environment in mind.

"TOSAS was the first company in the South African bitumen industry to receive ISO 14001 Environmental Certification in 1996 and we always remain aware of the importance of environmental sustainability. We remain extremely sensitive to environmental issues and we continuously research, review and develop new products and methods to maintain road surfaces as energy efficiently as possible, without causing harm to our already sensitive environment", says Jacobs.

"Although South Africa's climate narrows the applications window, especially during colder conditions, in terms of hot applied and modified bitumens, the TOSAS range is so comprehensive that we can recommend and supply a product for virtually any application irrespective of the season," continues Jacobs. "For instance, bitumen rubber, polymer modified and conventional penetration grade binders are normally only used from mid-August (Spring-time) to mid-April (autumn). Apart from the autumn and winter grade bitumen rubber and modified binders, cold applied products such as emulsions are also perfect alternatives that suit all seasons but are unfortunately totally under utilised in the South Africa currently".

Emulsions are manufactured with various binder contents but the most popular products in the TOSAS range are those with binder contents of 60%, 65% and 70%. The stability, break rate and performance in different applications are guided and controlled, depending on the emulsifier type, emulsifier concentration and pH-value of the emulsions. The different emulsions have specially been developed to react and behave optimally in accordance with specific application requirements to ensure that the customer is provided with the best possible result.

2/...Emulsions for all seasons from TOSAS

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TOSAS Technical Manager, Johan Muller, discusses the benefits of emulsions: "During winter, the majority of South Africa is very dry. Small cracks on the road surface opens up during the colder, dry winter conditions and diluted emulsion and fogspray applications are therefore more appropriate during winter months. The bitumen droplets in the emulsion stand a better change to penetrate deeper into the cracks where the actual rejuvenation is required. For fogspray applications, we recommend that customers dilute both anionic and cationic emulsions on site and prepare only a sufficient quantity required for that particular day.

Continuous agitation of both emulsions is furthermore also not necessary. Weekly circulation of undiluted emulsions in storage tanks fitted with centrifugal pumps is sufficient for the redistribution of the coarser emulsion particles that may settle under the influence of gravity".

Emulsions furthermore offer advantages under varying construction circumstances and climatic conditions to adjust the final binder content in seal applications. With an emulsion application, the binder is deposited between the aggregates and the road stones are not only anchored by their feet but happily held at their shoulders too.

TOSAS stable grade emulsion SS60 is by far the most versatile in our emulsion range. This non-corrosive anionic *slow set emulsion* offers a much wider application range compared to the highly corrosive cationic alternative. KSS the cationic stable grade is only required in a very specific area with a particular aggregate type. Anionic SS60 emulsion is suitable for fog sprays, in situ stabilisation, preparation of emulsion treated bases, dust suppression, tack coats, cold mix and slurry seal applications.

The cationic mix grade emulsions KMS60 and KMS65 from TOSAS are *medium set emulsions* for cold mix asphalt applications and allow sufficient mixing time when emulsions are mixed with single size aggregates (4.75 – 6.7mm). These cold mixes are suitable for emergency pothole repairs, as well as for surfacing of roads, pavements and parking areas. Since the surface may be water permeable, it is recommended to close the voids using anionic SS60 emulsion in a fine slurry in combination with the single sized aggregate mixes.

Muller explains that the Stock Mix emulsions are also cationic medium set products which are suitable for the production of cold mix through asphalt mix type plant applications. The medium breaking nature of Stock Mix 65 allows sufficient mixing time when the emulsion is mixed without breaking in the asphalt plant and but offers the advantage of a good stock pile performance of up to three months depending on the customer's requirements.

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The TOSAS rapid set cationic spray grade emulsions KRS60, 65 and 70 incorporate a rapid break rate to expel water which subsequently evaporates. According to Muller, spray and chip applications can benefit most from these rapid set qualities as they allow quick breaking of the emulsion in tack applications. The tack application is followed by stone chipping and a subsequent penetration emulsion application will ensure that bitumen is deposited between the aggregate. The KRS range can also be modified to enhance rheological properties of the net binder.

The rheological behaviour of the residual bitumen can also be improved with Tosas' modified anionic emulsions such as the Feltec-range. Feltec 60, typically modified with 1 to 3% percent latex, is well-suited for slurry seal applications while Feltec 60 with 5 to 8% modification is ideal for crack seals when crack are not wider than 5mm.

In conclusion Jacobs discusses the substantial investment of time and funds that TOSAS dedicates to maintaining the highest possible levels of training standards, cutting edge technology, as well as continuous and effective research and development. "We are proud of the respect that we enjoy as an industry leader. Our enviable and excellent reputation is well earned because we remain dedicated to sharing expert advice and combining this knowledge with our professionally researched range of emulsions and other products. Our product range includes conventional as well as modified binders and offers a solution for virtually every application, from priming, seal construction and asphalt surfacing to treatment and rehabilitation of existing surfaces".

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